

Urban Housing Dynamics and Health Hazards: An Overview

Janak P Joshi¹ & Bindu Bhatt^{2*}

¹GIS Specialist, Vadodara Smart City Development Ltd., Vadodara, Gujarat, India.

²Professor, Department of Geography, Faculty of Science, The Maharaja Sayajirao University of Baroda, Vadodara, Gujarat, India. Corresponding Author (Bindu Bhatt) Email: bindoobhatt@gmail.com*



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ABSTRACT

Urban housing dynamics play a crucial role in determining the health hazards faced by urban populations. A range of factors including the quality of housing, access to basic amenities, urban planning, and the presence of environmental hazards can all impact the health of residents. Although the association between the built environment and health is not easy, the effect of buildings on health, particularly housing, has been acknowledged for over a century. The interaction between health and housing has remained comparatively overlooked by researchers and policy makers, but currently nations and world leaders are looking for ways to improve health and wellbeing of their citizens.

The multidimensional and complex determinants of health span both the social, economic, psychosocial space, and the physical environments. The effects of the built environment on health can be direct, for example, by influencing environmental quality, or indirect, by influencing behaviors that impact disease diffusion and health.

Hence, we try to explore the different types of health and wellbeing risks in the urban environment. A brief literature based article provides an overview of the ways in which the urban built environment can affect human health, portrays how health hazards in housing are associated and apprehension for the health-housing link.

Keywords: Urban; Housing; Health; Well-being; Quality of Life; Hazards; Environment.

Introduction

For the first time in human history, majority of the world's population lives in cities. According to the United Nations (UN, 2018), approximately 29% of the world's population lived in urban areas in 1950. By 2000, 47% lived in urban areas, and the United Nations projected that approximately 61% of the world's population will live in cities. By 2030, six out of ten people will be city dwellers, increasing to seven out of ten people. This development is likely to remain in the future also.

Rapid population growth in urban centers throughout the world is creating an urban revolution. Their urban growth has paved the way for the establishment of a firm, expanded economic foundation to support the provision of housing, infrastructure and employment but deficiencies exist in housing quantity and quality, apart from others like the infrastructure and basic services. Urban environments are complicated, diverse, complex and growing, as are the causal features for human health and wellbeing.

According to the World Health Organization (WHO), the environment in which we live determines approximately 25% of our health status. Urban housing is a most important area for health intervention in built environments. Poor housing and health are generally associated with these problems in urban areas and features of urban frame. Many appraisals have been carried out on the health impact of interventions and/or risks within the house or built environment.

However, addressing the larger issues of policy execution and decision requires a broad combination of evidence. Some environments allow more pathogens than others, and population concentrations vary across environments, which impact disease spread.

Open Space

The features of neo-traditional communities promote social interaction, sense of community and walking [1]. Researchers found that high values of local street integration, which is associated with good walkability, are associated with low stress, while large streetscapes and squares with low detailing and complexity in building facades are more likely to be perceived as stressful. In general urban open spaces, streets and buildings cover more than half of city's total area, and as a result, this plays an important role in the city climate.

Generally, the accessibility to diverse open public spaces, the high density of mixed land use which permits walking and cycling, and contact to high-quality green spaces in the city can be linked to the encouraging effects of the physical and social urban environment on mental health. While some of these characteristics have been better investigated, many mechanisms, e.g. how the physical environment impacts the mind-body at the neurophysiological level and how this, in turn, might modify behaviors, are still unrevealed.

Similarly, association between green space and physical activity are ignored in many housing type. Studies have shown that green spaces can lower levels of stress [2] and reduce rates of depression and anxiety, reduce cortisol levels [3] and improve general well-being.

Thus, access to green space may have distinct effects on outdoor leisure time spent and doing the types of physical activity known to protect against chronic disease. Vicinity to green space (e.g., parks, tree cover, or open space) is an aspect of the built environment that may provide health benefits by increasing physical activity [4] or reducing exposure to air pollution [5] among other pathways [6].

Regular physical activity is a well-established protective factor for the prevention and treatment of the leading non-communicable diseases (NCDs), namely heart disease, stroke, diabetes and breast and colon cancer [7]. It also contributes to the prevention of other important NCD risk factors such as hypertension, overweight and obesity, and is associated with improved mental health [8-9] and enhanced quality of life and health. Globally, 23% of adults and 81% of adolescents (aged 11–17 years) do not meet the WHO global recommendations on physical activity for health [8].

The relationship between urban green space and physical activity is not only of academic interest, but also provides important significance for improving public health and rational urban land planning. This provides both reference and guidance for the planning of urban green open spaces, including the size of open space, landscape, and infrastructure. Summing up, green open spaces are a valuable resource for the improvement of human health and promote more involvement in physical activity to reduce health hazards.

Over Crowding

Crowding is the result of a mismatch between the dwelling and the household. It is a condition in which the numbers of occupants are more than the capacity of the available dwelling space, whether measured as rooms, bedrooms, or floor area, resulting in adverse physical and mental health outcomes [10-11]. The level of crowding relate to the size and design of the dwelling, including the size of the rooms, and the type, size, and needs of the household, including long-term visitors. Whether a household is “crowded” depends not only on the number of people living together in a house but also on their age, relationship, and sex. The effects of crowding can be mostly

defined as hazards associated with inadequate space within a dwelling for living, sleeping, and other domestic activities. Crowding is considered stressful to health and well-being across different cultures and aspects of life in low-income, middle-income, and high-income countries [12]. Several studies have reported a direct association between crowding and adverse health outcomes such as infectious diseases and mental health problems. In addition, researchers have connected crowding with poor educational attainment [13].

Disease vulnerability, incidence, transmission, and mortality all increase as a result of social and physical overcrowding. Overcrowding intensifies health risks caused by poor water supply and sanitation systems. Home and neighborhood accidents are more likely to occur. Epidemics are more frequent and grave when population density is high. Some housing-linked diseases are tied not only to the presence or quality of sanitary facilities but also to personal behavior and the socio-cultural environment, which influence the spread of food and water-borne infections such as cholera, typhoid, hepatitis, poliomyelitis, enterovirus, and respiratory infections *(Wlt) TRS No. 544, 1971).

Crowding is associated with transmission of tuberculosis [14] and respiratory infections. Lack of housing and the overcrowding found in temporary housing for the homeless also contribute to morbidity from respiratory infections and activation of tuberculosis [15-16].

It is detected that the household overcrowding leads to inadequate individual space and an absence of privacy and control over the environment, possibly obstructing social interactions, exposing private daily activities, and forcing social receptivity, probably leading to stress, cognitive and physical fatigue, and frustration for many individuals [17-21]. Overcrowded housing is a risk factor for the transmission of TB [22-24] and incidence of TB. In addition to overcrowding, the indoor quality of housing, such as ventilation and dampness is a risk factor for TB.

Mental Health

Urban living can adversely impact people's mental health status [25]. According to a report by WHO (1987), living in overcrowded conditions leads to lack of sleep for all family members, and the report suggests that sleep deprivation might have an adverse effect on the academic achievement of children.

Authors in [26-27] have presented evidence for the fact that children raised in a crowded home usually show behavioral problems both at home and at school. Sleep deprivation has been found to contribute to anger and stress, which in turn may lead to acts of aggression [28] Overcrowding has the propensity to invoke negative emotions, such as anger, and provoke insults.

Air Quality

From smog hanging over cities to smoke inside the home, air pollution poses a major threat to health and climate across the globe. Around 99 per cent of the global population breathes unhealthy air, said the World Health Organization (WHO April 4, 2022). Evidence shows that high residential density neighbourhoods are generally associated with poor air quality.

Also that high air pollution exposure often occurs in neighbourhoods with high walkability. Numerous studies have shown that air pollution, especially particles, contributes to long term morbidity and mortality from cardiovascular and respiratory diseases.

According to State of Global Air Report 2020, air pollution accounts for more than 1 in 9 deaths globally. It is estimated to have contributed to 6.67 million deaths (95% UI: 5.90 to 7.49 million) worldwide in 2019 and was the 4th leading risk factor for death globally.

People living in low-and middle-income countries are the most exposed to toxic quantities of particulate matter and nitrogen dioxide, the United Nations agency noted as it launched its 2022 air quality database. The number of cities monitoring air quality has increased to 6,000 in 117 countries, WHO noted in the launch of the database update April 4, 2022, ahead of World Health Day. Increased contact to traffic-related particulate matters may increase the risk of developing dementia, analysts have said. Particulate matters are microscopic air pollutant made up of solid or liquid matter and inhaling them can cause major health issues.

Health effects attributable to long-term exposure to PM_{2.5} include ischemic heart disease, lung cancer, chronic obstructive pulmonary disease (COPD), lower-respiratory infections (such as pneumonia), stroke, type 2 diabetes, and adverse birth outcomes.

The risk of dementia increased by 3 per cent for every one microgram per cubic meter increase of fine particulate matter exposure, noted the meta-analysis published in *Neurology* — the medical journal of the American Academy of Neurology — October 26, 2022

Daylight

Daylight has been linked with multiple health advantages. Since daylight cannot be artificially simulated, it is often discussed to as natural light. With the development of modern technology, artificial lighting has become one of the major factors in the formation and aggravation of global warming events, as it accounts for a significant proportion of urban energy consumption and carbon emissions [29-31].

Daylight provides variety and stimulation during the day and it is widely assumed that access to daylight decreases stress and increases productivity. Weather in general is found to influence people's health and mood. Daylight is widely believed to influence human health. Daylight and day lighting have been associated with lower absenteeism, reduced fatigue, relief of SAD, decreased depressive symptoms, improved skin conditions, better vision, positive impact on the behavioral disturbances seen in Alzheimer's disease and numerous other health advantages.

Heat and Health

Prolonged periods of high day and nighttime temperatures create cumulative physiological stress on the human body which exacerbates the top causes of death generally, including respiratory and cardiovascular diseases, diabetes mellitus and renal disease. Heat waves can highly effect large populations for short periods of time, frequently trigger public health emergencies, and result in additional mortality, and surging socioeconomic impacts (e.g. lost work capacity and labor productivity). They can also cause loss of health service delivery capacity, where power-shortages which often accompany heat waves disturb health facilities, transport, and water infrastructure.

Urban Heat Island

Built environments are commonly hotter than their neighboring rural counterparts. This phenomenon, commonly referred to as the urban heat island effect, contributes to a range of public health issues. Once the temperature

exceeds the upper tolerance limit, heat waves may directly affect human health, leading to a higher incidence and mortality for certain diseases [32].

There is a large body of research which associates exposure to high or low temperatures to increased illness, hospitalization and mortality, globally [33-34]. Events such as heat waves can lead to peaks in heat-related mortality over the space of a few days. For example, the May 2010 heat wave in Ahmedabad, India, was associated with significant excess all-cause mortality: 4462 all-cause deaths occurred, meaning an estimated 43.1% increase when compared with the reference period with 3118 deaths [35]. Heat exposure is also associated with several non-fatal health outcomes, including heat strokes, dehydration, loss of labor productivity, and decreased learning [36-37].

The high temperatures can affect the health of city dwellers, causing widespread discomfort, respiratory problems, sunstroke, dehydration, tiredness and even increasing mortality rates due to heatstroke. High temperatures not only affect those with cardiovascular, cerebrovascular, and respiratory diseases [38], but also increase the incidence and mortality of those with mental disorders.

High indoor temperatures affect aspects of human health, with the strongest evidence for respiratory health, diabetes management and core schizophrenia and dementia symptoms. Exacerbation of symptoms in warm indoor environments has clinical relevance to at-risk groups and those caring for them. Studies have shown an association between high indoor temperatures and adverse health effects [39] (Ormandy & Ezratty 2016).

Conclusion

Overall demographic trends suggest that urban living has become widespread, and there is an urgent need to consider how urban living may influence the health of population. Interventions to improve health through the environment includes actions and policies. The study of urban health requires a multidisciplinary perspective. Epidemiologists' work in the area can complement the work of public health practitioners, urban planners, as well as social, behavioral, clinical, and environmental health scientists can assist planners and decision makers for livable cities and healthy citizens.

Declarations

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Competing Interests Statement

Authors have declared no competing interests.

Consent for Publication

The authors declare that they consented to the publication of this research work.

Author's Contribution

Both the authors took part in data collection and manuscript writing equally.

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